

**REMARKS**

Claims 1-8 are pending in this application. By this Amendment, claims 1-3 and 7-8 are amended. In light of the following remarks, Applicants respectfully request reconsideration and allowance of the pending claims.

The courtesies extended to Applicants' representative by Examiner Angebrannndt at the interview held June 28, 2006, are appreciated. The reasons presented at the interview as warranting favorable action are incorporated into the remarks below and constitute Applicants' record of the interview.

As agreed upon in the personal interview, amendments which only amend "comprising" to "consisting of" do not raise new issues. Thus, as agreed at the personal interview, this Amendment After Final should be entered.

As an initial matter, the Office Action lists claim 9 in several of the rejections over applied references. Because claim 9 was cancelled in the December 8, 2005 Amendment, Applicants understand the rejections are moot with respect to claim 9.

**Item 3 of the Office Action: Rejection under 35 U.S.C. §103**

The Office Action rejects claims 1-6 and 9 under 35 U.S.C. §103(a) over U.S. Patent No. 5,124,232 to Nakanishi et al. (Nakanishi). Applicants respectfully traverse the rejection.

As agreed at the personal interview, as Nakanishi does not disclose a recording layer lacking Ga, current claims 1-6 are patentable over Nakanishi.

In the information-recording medium defined in amended claim 1, the recording layer consists of Bi, Ge and Te, and the composition of the recording layer are within a range surrounded by the points F3, C3, D3, D5, C5 and F5, described in the Specification. In the information-recording mediums defined in amended claims 2 and 3, the recording layer consists of Bi, Ge and Te, and the composition of the recording layer are within a range surrounded by the points F2, C2, D2, D6, C8 and F7, described in the Specification. The

recited subject matter of claims 1-3, as supported by the Specification, provides an information-recording medium which solves all of the problems 1-8 as described at paragraph [0160].

On the other hand, Example 6a of Nakanishi teaches a GeTeBiGa composition where on a GeTeBi ternary phase diagram, the composition is Te 50.92%, Ge 41.66%, and Bi 7.42%, which would be bounded by F3, C3, D3, D5, C5 and F5. However, in Nakanishi, Ga is a necessary component for forming the recording layer. Further, Nakanishi does not teach or suggest any GeTeBi composition which does not contain Ga. Namely, the recording layer consisting of Bi, Ge and Te as recited amended claims 1-3 is not taught or suggested in Nakanishi. In addition, Nakanishi does not suggest the information-recording medium which solves all of the problems 1-8 as described in the specification at paragraph [0160].

For the forgoing reasons, Applicants respectfully request withdrawal of the rejection.

**Item 4 of the Office Action: Rejection under 35 U.S.C. §103**

The Office Action rejects claims 1-7 and 9 under 35 U.S.C. §103(a) over U.S. Patent No. 6,761,950 to Kojima et al. (Kojima '950) in view of Japanese Patent Publication No. JP 63-225935 to Yamada et al. (Yamada '935) (corresponding to Japanese Patent No. 2,574,325). Applicants respectfully traverse the rejection.

Kojima '950 teaches the problem that diffusion of S occurs between the recording layer and the dielectric layer when  $(\text{ZnS})_{20}(\text{SiO}_2)_{80}$  [mol %] is used as a material of the dielectric layer which contacts with the recording layer (for example, see column 3, lines 26-36). In addition, Kojima '950 teaches in column 2, lines 52-55 as follows:

"if a lot of S diffuses into recording layer, a reduction of the reflectance of recording layer is caused, and overwrite cyclability deteriorates."

In order to solve the above problem, Kojima discloses an information recording medium in which the dielectric layer, which contacts with the recording layer, is formed of a

Zr-Zn-S-O based material in place of  $(\text{ZnS})_{20}(\text{SiO}_2)_{80}$  (for example, see claim 1 of Kojima '950).

In addition, for example, TABLE 2 of Kojima '950 (col. 39, lines 33-51) indicates that, when using  $(\text{ZnS})_{20}(\text{SiO}_2)_{80}$  as a material of the dielectric layers (sample No. 1-1), the number of overwrite cycles is 1,000 times and when using a Zr-Zn-S-O based material as a material of the dielectric layers (sample Nos. 2-5 to 2-9), the number of overwrite cycles is not less than 10,000 times. From TABLE 2 and the above diffusion problem of Kojima, it is noted that, when using  $(\text{ZnS})_{20}(\text{SiO}_2)_{80}$  as a material of the dielectric layer, the number of overwrite cycles is reduced due to the diffusion of S between the recording layer and the dielectric layer.

Further, TABLE 2 of Kojima '950 indicates that, when using ZnS as a material of the dielectric layers (sample No. 1-3), the number of overwrite cycles is 1,000 times similar to the sample No. 1-1 having the dielectric layers formed of  $(\text{ZnS})_{20}(\text{SiO}_2)_{80}$ . This is also caused by the above diffusion problem, that is, when the dielectric layer, which contacts with the recording layer, is formed of ZnS, diffusion of S between the recording layer and the dielectric layer will occur, and thus the number of overwrite cycles is reduced.

On the other hand, Yamada '935 describes at page 6, lower left column, lines 10-17 as follows:

"Example 3:

In each composition points corresponding to Examples 1 and 2, optical disks were manufactured and dynamic response thereof were measured. In the optical disk, ZnS, Ge-Bi-Te film and ZnS were formed in this order on the PMMA resin substrate..."

Namely, Yamada '935 discloses the optical disk in which the recording layer is Ge-Bi-Te film and the ZnS layer is formed in contact with the recording layer.

Considering the teachings of TABLE 2 and the diffusion problem of Kojima '950, it would have been expected that the diffusion of S between the recording layer and the ZnS layer would occur in the optical disk disclosed in Yamada '935 because the ZnS layer contacts with the recording layer in the structure of Yamada '935. Thus, Kojima '950 teaches away from the combination of Kojima '950 and Yamada '935. Accordingly, one ordinary skill in the art would not have been motivated to use the recording layer disclosed in Yamada '935 to modify the recording layer disclosed in Kojima '950 for the purpose of avoiding the problem of S-diffusion. Thus, the rejection is improper.

For the forgoing reasons, Applicants respectfully request withdrawal of the rejection.

**Item 5 of the Office Action: Rejection under 35 U.S.C. §103**

The Office Action rejects claims 3-6 and 9 under 35 U.S.C. §103(a) over Kojima in view of Japanese Patent Publication No. JP 62-209741 to Kimura et al. (Kimura '741) (corresponding to Japanese Patent No. 2,592,800). Applicants respectfully traverse the rejection.

Kimura '741 states, at page 5, lower left column, lines 12-15, as follows:

"First, a ZnS thin film having the thickness of 90 nm was deposited on the substrate as a heat-resistant layer. Then, a recording layer having the thickness of about 100nm was deposited on the ZnS thin film. Further, a ZnS thin film having the thickness of 180 nm was deposited on the recording layer as a heat-resistant layer."

As described above, Kimura '741 discloses an optical disk having a ZnS thin film which contacts with the recording layer.

Considering the teachings of TABLE 2 and the diffusion problem of Kojima, it would have been expected that diffusion of S between the recording layer and the ZnS thin film would occur in the optical disk disclosed in Kimura '741 because the ZnS thin film contacts the recording layer in the structure of Kimura '741, as disclosed. Accordingly, one of

ordinary skill in the art would not have been motivated to use the recording layer disclosed in Kimura '741 to modify the recording layer disclosed in Kojima for the purpose of avoiding the problem of S-diffusion.

For the forgoing reasons, Applicants respectfully request withdrawal of the rejection.

**Item 6 of the Office Action: Rejection under 35 U.S.C. §103**

The Office Action rejects claims 1-7 and 9 under 35 U.S.C. §103(a) over Kojima '950 in view of Japanese Patent Publication No. 02-147288 to Kimura et al. (Kimura '288).

Applicants respectfully traverse the rejection.

As agreed at the personal interview, as Kimura '288 discloses a GeTeBiSn composition, current claims 1-7 are patentable over Kimura '288.

The information-recording medium recited in amended claims 1-3 and 7 has a recording layer consisting of Bi, Ge, and Te.

On the other hand, Sample E of Kimura '288 contains a GeTeBiSn composition, where on a GeTeBi ternary phase diagram, the composition is Te 50.36%, Ge 44.55% and Bi 5.1%, which is allegedly bound by F3, C3, D3, D5, C5 and F5. However, although Kimura '288 discloses the recording film consisting of Ge, Te, Bi, and Sn (See table), Kimura '288 does not teach or suggest the recording layer consisting of Ge, Te and Bi as recited amended claims 1-3 and 7.

Thus, even if the composition taught by Kimura '288 would have been used instead of the composition disclosed by Kojima '950 in example No. 11-2, the features of amended claims 1-3 and 7 would not have been achieved.

Claims 4-6 are patentable for the same reasons as base claim 3.

For the forgoing reasons, Applicants respectfully request withdrawal of the rejection.

**Item 7 of the Office Action: Rejection under 35 U.S.C. §103**

The Office Action rejects claims 1-6 and 8-9 under 35 U.S.C. §103(a) over Nakanishi in view of U.S. Patent Publication No. 2002/0172139 to Kondo et al. (Kondo). Applicants respectfully traverse the rejection.

As discussed above in Item 3, Nakanishi does not disclose or suggest the recording layer consisting of Ge, Te and Bi as recited in amended claims 1-3 and 8. Accordingly, even if the wobbled grooves taught by Kondo would have been used in the recording medium taught by Nakanishi, the inventions as defined in claims 1-3 and 8 would not have been achieved.

Claims 4-6 are patentable for the same reasons as claim 3.

For the forgoing reasons, Applicants respectfully request withdrawal of the rejection.

**Item 8 of the Office Action: Rejection under 35 U.S.C. §103**

The Office Action rejects claims 1-9 under 35 U.S.C. §103(a) over Kojima '950 and either Yamada '935 or Kimura '288 and in view of Kondo. Applicants respectfully traverse the rejection.

Regarding the applied references as including Yamada '935, as discussed in relation to item 4 of the Office Action, one of ordinary skill in the art would not have been motivated to modify the recording layer disclosed in Kojima '950 by the composition disclosed in Yamada '935 because Kojima '950 teaches away from the combination by disclosing that S-diffusion results in deterioration of the overwrite capability of optical recording mediums. Thus, the combination of Kojima '950 and Yamada '935 is improper. Kondo does not cure this deficiency.

Regarding the applied references as including Kimura '288, as discussed in relation to item 6 of the Office Action, even if the recording layer disclosed in Kojima '950 is modified

by the composition disclosed in Kimura '288, the claimed subject matter is not taught because Kimura '288 discloses a GeTeBiSn composition. Kondo does not cure this deficiency.

For the foregoing reasons, Applicants respectfully request withdrawal of the rejection.

**Items 9 and 10 of the Office Action: Rejections under the Doctrine of Obviousness-Type**

**Double Patenting**

The Office Action provisionally rejects claims 1-9 under the doctrine of Obviousness-Type Double Patenting over claims 1-29 of copending Application No. 11/028586 and further provisionally rejects claims 1-9 under the doctrine of Obviousness-Type Double Patenting over claims 1-13 of copending Application No. 11/028586.

A Terminal Disclaimer is filed herewith which disclaims any patent term of any patent issuing from the present Application over any patents issuing from the above copending Applications. Thus, the rejection is moot.

For the foregoing reasons, Applicants respectfully request withdrawal of the rejection.

**Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-8 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachments:

Petition for Extension of Time  
Terminal Disclaimer

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